

## ABSTRACT OF THE DISCLOSURE

A method and apparatus for substantially reducing or eliminating electromagnetic and electrostatic coupling between signal traces on a substrate is disclosed. A substrate, such as a printed circuit board, is formed with an electrically insulative layer and a conductive layer. A portion of the conductive layer is removed to form circuit traces including signal traces and voltage reference traces configured such that each signal trace is separated from each other signal trace by at least one voltage reference trace. The invention is also applied to multiple layer printed circuit boards including a single voltage reference plane, an electronic system, and a semiconductor substrate. According to another aspect of the invention, a majority of a conductive layer is left on an insulative layer of a substrate by removing only those portions of the conductive layer immediately adjacent signal traces such that the remaining conductive material, which is ordinarily removed, acts to couple electromagnetic and electrostatic fields from the signal traces.

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